

REMARKS

Claims 24-58 are pending in this application. Claims 1-23 were previously canceled. Claim 24 is amended and claim 58 is added herein. Applicant respectfully requests reconsideration of the claims in view of the following remarks.

Independent claim 24 was rejected under 35 U.S.C. § 103(a) as being anticipated by Inaba, *et al.* (U.S. Patent No. 6,525,403) and dependent claims 25-47 have been rejected in view of Inaba, *et al.*, either singly or in combination with other references. Applicant respectfully traverses these rejections.

Claim 24 specifically recites that "the source-substrate junction or drain-substrate junction [is] higher than the bottom surface of the gate electrode." The limitation that the amount is "by at least about 50 angstroms" has been removed from claim 24 and presented in newly added claim 58. Applicant respectfully submits that claim 24 is allowable over the references of record.

While the figures seem to illustrate the original limitation of the last clause of the original claim 24 (see e.g., Inaba, *et al.*'s Figure 11c and 11d), Inaba, *et al.* does not make any teaching of how the source and drain 15 could be formed above the bottom surface of the gate electrode. It is well established law that the disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation. *Elan Pharm., Inc. v. Mayo Foundation for Medical and Education Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003). See MPEP § 2121.01. In this case, Inaba does not provide an enabling disclosure. In fact, the text of the Inaba disclosure does not provide any indication that the source/drain junction is spaced from the bottom surface of the electrode much less any

rationale as to why one would space the junction from the surface. One of ordinary skill in the art would not know to space the source/drain junction based upon Inaba's teaching.

To support this conclusion, Applicants have provided an Affidavit under 37 C.F.R. § 1.132 from Chao-Hsing Wang. Dr. Wang is one of at least ordinary skill in the art and has stated that, based on the teachings of Inaba, he would not know how to form a structure as shown in the figures of the Inaba that includes a source region or a drain region that has a source-substrate junction or a drain-substrate junction that is higher than the bottom surface of the gate electrode. In view of this considerable evidence, it is not sufficient to summarily conclude that one of the figures shows the limitation.

Therefore, it is respectfully submitted that claim 24 is allowable over the references of record.

Claims 25-47 depend from claim 24 and add further limitations. It is respectfully submitted that these dependent claims are allowable by reason of depending from an allowable claim as well as for adding new limitations.

Independent claim 48 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Inaba, *et al.* in view of Yu, *et al.* (U.S. Patent No. 6,764,884). Dependent claims 49-57 have been rejected in view of Inaba, *et al.* and Yu, *et al.*, either together or in combination with other references. Applicant respectfully traverses these rejections.

Claim 48, as originally filed, specifically recites "forming a region of material adjacent portions of the semiconductor fin not underlying the gate electrode such that a sidewall of the semiconductor fin extends above an upper surface of the region of material; and doping the sidewall of the semiconductor fin above the region of material." Applicant respectfully submits that the references of record do not teach or suggest the limitations of claim 48.

Neither Inaba nor Yu teach doping a sidewall of the semiconductor fin above a region of material. The Office Action admits that Inaba does not teach the limitation. Further, Yu does not teach such a limitation. At column 6, line 24, Yu teaches that the source/drain regions 220 and 230 can be doped. The Office Action has not shown, nor can Applicant find, any place that teaches or suggests that the doping is performed above any region of material. Since neither reference alone teaches the claimed limitation, the combination of references cannot teach the claimed limitation.

With respect to Yu, the Office Action states that this reference teaches that the use of a dielectric mask to protect the fin region from source/drain implantation is conventional in the art. In particular, the Office Action cites to col. 4, lines 5-18, which states:

After the formation of fin 210, source and drain regions may be formed adjacent the respective ends of fin 210. For example, in an exemplary embodiment, a layer of silicon, germanium or combination of silicon and germanium may be deposited, patterned and etched in a conventional manner to form source and drain regions. FIG. 2B illustrates a top view of semiconductor 100 including source region 220 and drain region 230 formed adjacent fin 210 on buried oxide layer 120, according to an exemplary embodiment of the present invention. The top view in FIG. 2B is oriented such that the cross-section in FIG. 2A is taken along line AA in FIG. 2B. The photoresist mask 150 is not illustrated in FIG. 2B for simplicity.

Applicant is not sure how this passage is even remotely relevant to the issue at hand, namely how Yu would suggest to one of ordinary skill in the art to modify Inaba by forming a region of material adjacent portions of the semiconductor fin not underlying the gate electrode and doping the sidewall of the semiconductor fin above the region of material. Yu does not teach doping the source and drain until Column 6, during which process there is no region of material above which the doping is performed. See Yu, col. 6, lines 25-38.

In response to Applicant's earlier arguments, the Office Action states that it would have been obvious to incorporate the conventional process taught by Yu in the process by Inaba in order to protect the region below the source/drain region from ion implantation. But Yu, *et al.*, never teaches forming a region of material adjacent portions of the semiconductor fin not underlying the gate electrode such that a sidewall of the semiconductor fin extends above an upper surface of the region of material. In other words, such a process is not a conventional process.

Claims 49-56 depend from claim 48 and add further limitations. It is respectfully submitted that these dependent claims are allowable by reason of depending from an allowable claim as well as for adding new limitations.

Applicant has made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Ira S. Matsil, Applicant's attorney, at 972-732-1001 so that such issues may be resolved as expeditiously as possible. No fee is believed due in connection with this filing. However, should one be deemed due, the Commissioner is hereby authorized to charge Deposit Account No. 50-1065.

Respectfully submitted,



Ira S. Matsil
Attorney for Applicant
Reg. No. 35,272

5/16/05
Date

Slater & Matsil, L.L.P.
17950 Preston Rd., Suite 1000
Dallas, Texas 75252-5793
Tel. 972-732-1001
Fax: 972-732-9218